Study #SP-R18 Recreation Activity, Spending, and Associated Economic Impacts

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1.0 Introduction/Background

An economic impacts study typically characterizes existing economic conditions within a region (or community) and quantifies changes in economic activity, as measured by sales, employment, and personal income, associated with an action that alters the level of economic activity within the region. This study would describe how economic activity generated by recreation use and government spending associated with the operations and management of the Lake Oroville State Recreation Area (Oroville Facilities) and affected downstream reaches of the Feather River affects local and regional economic conditions.

No ongoing or past studies specifically focusing on the economic effects of recreational development and use of the Oroville Facilities have been conducted. The study results will facilitate comprehensively evaluating the socioeconomic effects of existing and projected recreation use and operations and management of the Oroville Facilities and will provide a framework for developing effective recreation-development strategies to potentially enhance economic development in the region.

This study plan provides details concerning the content and scope of the economic impacts study and a description of the analytical approach that will be used to conduct the study. The focus of this first phase study is on "baselining" economic activity conditions associated with recreation use, and operations and management of the Oroville Facilities. This baseline will allow for subsequently evaluating potential changes in recreation use under alternative recreation development and use scenarios. Elements of this study plan include a discussion of the relationship of the study plan to the relicensing project process, and the purpose and need for the study; a description of the scope of the Study Area; a discussion of the general approach to conducting the economic impacts study and the steps required to conduct the study; a description of the study's results and products; and the study plan's implementation strategy.

2.0 Study Objectives

The objectives of the economic impacts study are to estimate the effects of spending activity generated by current and projected recreation use, and the operations and management of the Oroville Facilities on local business sales, employment, and personal income. Conducting and presenting an economic impacts assessment will facilitate an understanding of the effects on local and regional economic conditions associated with use and operations and management of recreational facilities in the Oroville Facilities.

Local economic impacts primarily result from spending associated with recreational use of the Oroville Facilities and from spending by government agencies responsible for operations and management of these facilities. As recreation activity levels vary in response to water conditions and other factors, spending by local residents and visitors to the region also change. These spending levels affect local business sales, which in turn affect employment opportunities and levels of personal income.

The economic impacts study will quantify recreation-related spending and spending by key operations and management agencies (i.e., DWR and California Parks and Recreation) and will assess the associated impacts on local business sales, employment, and personal income within Oroville, Chico, Paradise, Gridley, Biggs, and in unincorporated Butte County related to recreation use and operation and management of the Oroville Facilities.

A secondary objective of the economic impacts study is to gain a better understanding of the relationship between the Oroville Facilities and economic development and growth within the region, particularly focused on the Greater Oroville area. This understanding will provide a framework for eventually evaluating operating and facility development strategies for improving local economic conditions, including opportunities for public/private partnerships.

The economic impacts study will focus on characterizing existing local and regional economic activity; estimating current levels of business sales, employment, and personal income associated with recreation use and operations and management of the Oroville Facilities; and projecting future changes in business sales, employment and personal income resulting from potential changes in recreation use and management and spending caused by projected growth in visitation to the Oroville Facilities. Economic conditions and impacts will be evaluated for six jurisdictions: the Greater Oroville Area, the Cities of Paradise, Gridley, Biggs, and Chico, and the County of Butte. Direct, indirect, and induced effects on these jurisdictions will be evaluated. Conditions and effects on other jurisdictions within Butte County and outside Butte County will be addressed qualitatively because it is believed that these effects are minor.

3.0 Relationship to Relicensing/Need for the Study

This study is needed to meet FERC direction for preparing socioeconomic exhibits. Specifically, FERC guidelines indicate that "estimates should be provided for changes in employment and income associated with any anticipated modifications to recreation use in the Study Area, such as whitewater rafting, boating, or fishing." The analysis requires evaluating the effects of changes in the level of use for different recreation activities and management on spending and associated economic activity.

The purpose of the economic impacts study is to determine how existing and projected recreation use of the Oroville Facilities and operations and management of these facilities affects local business sales, employment and personal income levels. Furthermore, the study's purpose is to provide a framework for developing effective strategies to potentially enhance economic conditions in the region. In addition to understanding of the local and regional economic effects of recreation use and operations and management at the Oroville Facilities, the study is needed to comply with FERC guidelines for socioeconomic assessments.

To date, limited information has been compiled to characterize spending and associated economic impacts of recreation use of the Oroville Facilities. A user survey conducted in 1996 by Chico State University (Guthrie et al. 1997) collected information on spending by visitors to the Oroville Facilities. Estimates of spending by recreationists at other reservoirs and rivers throughout California also are available from numerous studies but are unlikely to provide reliable estimates for this study. Data will need to be collected from recreationists and local businesses to better understand the economic implications of recreation activity at the Oroville Facilities.

Existing budgetary information is available for assessing government spending related to operations and management of the Oroville Facilities. Procedures for collecting these data are described in Section 5.0 of this study plan.

4.0 Study Area

Economic impacts associated with recreation activity and operations and management of facilities will be evaluated at the community and county level. The Study Area will include communities in close proximity to Lake Oroville, including Oroville, Paradise, Gridley and Biggs, the City of Chico, and the unincorporated (countywide) area of Butte County. This Study Area would extend beyond the boundary of the FERC Oroville Relicensing project but is necessary to capture the majority of the economic impacts, which result largely from expenditures by the Oroville Facilities recreationists in nearby communities.

Economic impacts resulting from recreation-related expenditures may also be felt in other communities but these effects, are believed to be minor and will be evaluated qualitatively.

5.0 General Approach

Detailed Methodology and Analysis Procedures

The economic impacts study will focus on characterizing existing and projected economic impacts resulting from recreation-related use and operations and management of the Oroville Facilities. Economic impacts will be evaluated for six jurisdictions: the Greater Oroville Area, the incorporated areas of Paradise, Gridley, Biggs, and Chico, and the County of Butte. Direct, indirect, and induced effects will be estimated. The assessment will quantify economic effects for two time periods: 2002 and a single future year of projected recreation use. Sales and personal income effects will be presented in constant dollars, tied to 2002 conditions.

As previously noted, this study represents the first phase of an assessment of potential economic effects resulting from relicensing. The primary goal for this study is to develop appropriate analytical models that can be used for assessing both existing levels of recreation use, and operations and management (baseline conditions) and potential recreation development and enhancement scenarios. These scenarios may involve recreation facility development or resource enhancements that would affect recreation use and management.

The following general assumptions will be key for the economic impacts study.

- Economic activity in areas other than the Greater Oroville Area, Paradise, Gridley, Biggs, Chico, and the County of Butte is largely unaffected by recreation use of the Oroville Facilities.
- The Existing Recreation Use Study and the Projected Recreation Use Study will provide data on existing and projected recreation use of the Oroville Facilities.
- The economic structure, including the types of businesses, of the affected communities and the County of Butte in the future will be similar to the existing structure.

Task 1—Gather Data

Data needs and sources for this study will include the following.

- Current levels of recreation use and activity, by type of use and activity.

  Existing and Projected Recreation Use Studies.

- Spending profiles, by type of user, activity, and location.

  Chico State Recreation Use Study (Guthrie et al. 1997), data from the Recreation Surveys, recreation activity and spending data for special events at the lake, and data from studies of other similar resources (reservoirs and rivers).

- Information on current economic activity and the economic development of the area

  County Business Patterns data, Bureau of Labor Statistics data, Census Bureau data, local Chambers of Commerce, local general plans and economic development plans, local realtors, and interviews with local residents.

- Information on the budgets of key agencies that are involved in the operation and management of the Oroville Facilities

In addition to collecting and reviewing the information above, previous studies and models used by the NPS and USFS that assessed the economic effects on local economies from recreation and park spending will be reviewed.

Task 2—Conduct Interviews and Surveys

Interviews will be conducted with local businesspersons in Oroville, Paradise, Gridley, Biggs, and Chico to gather preliminary information on patterns of local trade. If necessary, this information will then be used to develop a more comprehensive survey of local businesses to determine sales and purchase patterns and employment requirements.

Task 3—Prepare Economic Conditions Report

Data collected from Butte County, Oroville, Paradise, Gridley, Chico, and Biggs will be used to describe existing economic conditions for each jurisdiction. Demographic and socioeconomic characteristics will be described, with particular emphasis placed on identifying types of businesses and levels of employment for businesses affected by existing recreation use of Oroville Facilities. In addition, anecdotal information gathered through interviews with local realtors, ORAC members, and long-time residents will be presented to characterize how the past development of recreation use within the Oroville Facilities has affected property values and economic development in the local area.

Task 4—Evaluate Economic Impacts Related to Recreation Use Changes

Several methodological techniques have been used in economic impact studies to estimate economic activity, employment, and personal income effects of public policy changes. The three most commonly used modeling techniques include the application of econometric models, economic base models, and input-output models, as summarized below.

- **Econometric Models:** Typically constructed from time-series data for the region of interest, these models are developed using regression techniques. Systems of equations are developed that relate economic and demographic variables. Application of these models requires sufficient input data to accurately estimate critical relationships, comprehensive and complete data on key socioeconomic variables, and sound theoretical bases for linking different variables together.

- **Economic Base Models:** These models rely on the conceptual distinction between a region's "basic" economic activities (those that are exported to other regions and thus bring income to the region), and "non-basic" activities (those that exist to support the region's population and basic activities). When each activity is measured, usually in terms of employment or income, these two categories of economic activity can be expressed as a ratio. The ratio of non-basic to basic employment can be thought of as a "multiplier" that can be used to forecast changes in non-basic employment from a proposed change in basic employment. A primary challenge with this modeling approach is in distinguishing a region's basic activities from its non-basic activities.

- **Input-Output Models:** Regional inter-industry linkages are the focus of input-output models, which are built from detailed accounts of the money flows between different sectors of the economy. An increase in production in one economic sector leads to smaller production increases in other sectors, which in turn lead to further increases. Input-output models simultaneously consider these inter-sectoral linkages. Most of the "off-the-shelf" input-output models, such as IMPLAN, RIMS, and RSRI, are based on county-level data; however, techniques have recently been developed to scale-down these models to the subcounty or community level (Robison 1997).

Because of the need for community-level analysis, an input-output model of the County of Butte scaled down to the community level using economic base information will be used for the assessment. The county-level database and modeling system to be initially used in this study is IMPLAN (Impact Analysis for Planning), which was developed by the USDA Forest Service in cooperation with the Federal Emergency Management Agency and the USDI Bureau of Land Management. IMPLAN has been used for estimating the employment and income effects of a wide range of public policies, including recreation effects related to hydroelectric relicensing (see www.IMPLAN.com).

A community-level approach to economic modeling, pioneered by Economic Modeling Specialists, Inc, will be used for the analysis. The approach allows for accurately estimating and displaying economic impacts in small communities. Community modeling requires considerable fieldwork to assure accuracy of model components and to develop base data for the community. The approach also coveys a dynamic, through- time dimension, incorporating baseline projections made by state planning authorities (Robison and Mack, 1997**).**

For the Oroville Relicensing Project, basic economic modeling data will be obtained from the Minnesota IMPLAN Group (i.e., IMPLAN data).

These data will undergo significant revision in the course of field research. The Butte County economic impact models will be constructed using the general data-collecting and trade-estimating methods outlined in Robison (1997). Additional detail on the approach and its applications can be found in Robison (1995).

Community-level IO models will be constructed for Butte County and the communities principally impacted by the Oroville Facilities (Oroville, Paradise, Biggs, Gridley, and Chico). The models will be constructed following extensive fieldwork to assure baseline data (e.g., sector-specific employment and earnings) will be generally acknowledged as accurate by community leaders. Given a proposed change in direct economic activity (e.g., a change in visitors or level of operations and management personnel) the models will show the associated impact on community-level jobs and earnings. In addition to individual community impacts, the models will be constructed with an inter-community impact component. A web of intercommunity trade interconnects the communities of Butte County, including trade in local goods and services, and commuting. This means that a change in one community will have repercussions at other communities. This pattern of intercommunity trade, including spillovers from the five focus-communities to the rest of the Butte County, will be built into the model. Direct and indirect impacts will be distinguished.

Developing community-level models for assessing the local economic effects of recreation activity and operations and management of facilities will require collecting data from local businesses to account for trade flows within the county. Interviews and potential surveys will be designed to collect this information. In addition, economic data by zip code available from the IMPLAN database will be used to characterize local trade patterns, employment, and earnings by type of business.

Task 5—Create Economic Impact Spreadsheet Model and Estimate Impacts

Using Excel or similar spreadsheet development software, an economic impacts spreadsheet model will be developed for each affected jurisdiction incorporating sales-to-employment and sales-to-personal income relationships developed as part of Task 4. The model will be constructed so that it is sensitive to changes in input variables such as levels of visitor spending and use, and recreation facility types and size. Model output will include incremental changes in employment and personal income, by type of business.

Task 6—Prepare Study Plan Summary Report

A report will be prepared describing the estimated current and projected future economic effects of recreation use and operations and management of Oroville Facilities, and will include an evaluation of opportunities for enhancing economic conditions related to relicensing. The report will highlight the spatial aspects of direct spending in the construction and hospitality industries and of associated indirect impacts on communities in Butte County.

Task 7—Revise Study Plan Summary Report and Prepare Final Report

Based on review of the draft study plan summary report, the report will be revised in response to comments and a final report will be prepared.

6.0 Results and Products/Deliverables

Results

Results of the study will be used to characterize the economic impacts to the Greater Oroville Areas, the incorporated areas of Paradise, Gridley, Biggs, and Chico, and to Butte County of existing and projected recreation use and operations and management of Oroville Facilities. Results, including estimates of sales and personal income for each jurisdiction, will be presented in year 2002 dollars, rounded to the nearest thousand. Results will be presented in both narrative and tabular form.

The results, which will reflect the sensitivity of economic activity to specific levels of recreation use and development, will be used to evaluate possible recreation-development opportunities that could enhance the economic conditions of affected jurisdictions. This evaluation will be qualitative, with the results described in narrative form.

Products and Deliverables

Study Plan Summary Reports

The results of the tasks performed under the study plan will be in a study plan report incorporating information on background economic conditions and existing and projected economic impacts. The results of the tasks performed under the study plan will be in a study plan summary report incorporating information on background economic conditions and existing and projected economic impacts. The study plan summary report would be prepared between March and June 2003. An interim report describing baseline economic conditions will be prepared at the end of 2002.

The economic conditions background section will summarize existing economic activity, employment, and personal income by affected jurisdiction. Background information on economic development of the region and how development of recreation facilities affected this growth will be presented in narrative and tabular form. Current recreation use-related effects on economic activity, including employment and personal income effects, will be estimated and presented, and a qualitative discussion of how recreation development of the Oroville Facilities has affected market and assessed values of properties in the vicinity of the Oroville Facilities will be included. Unrealized costs and benefits from development and operation of the Oroville Facilities will not be addressed in the report.

The economic impacts section will present the analysis of a future growth scenario, and will include the revenue-enhancement evaluation. Generally, the study plan summary report will include the following:

1. Introduction and technical scope of the study;
2. Description of the geographic Study Area;
3. Explanation of key assumptions;
4. Description of data sources, including historical information;
5. Description of analytical methods, including analysis of historical data;
6. Detailed presentation of study results (narrative, tables, graphs, charts);
7. Identification of any complications/data concerns;
8. Conclusions of economic impacts analysis;

9. Evaluation and discussion of potential revenue-enhancement options; and
10. Identification of further research needs.

Resource Database

An economic impact spreadsheet model will be developed as part of the study. This model will be available for future evaluation of relicensing operating and facility development scenarios. The model, however, may need updating to reflect current economic conditions should this analysis lag the original creation of the model by more than a few years. This may require that the model be updated prior to evaluation of operating and facility development scenarios.

7.0 Coordination and Implementation Strategy

Coordination with Other Resource Areas/Studies

This study will require coordination with the following recreation studies: Reservoir Boating Study (#7), Existing Recreation Use Study (#9), Projected Recreation Use (#12), Recreation Surveys (#13), and Regional Recreation and Barriers Assessment (#14).

Issues, Concerns, Comments Tracking and/or Regulatory Compliance

The results of the study will address Socioeconomic Issue #1, Improve economic development through recreation opportunities at the Oroville Facilities. It specifically addresses the following recreation and socioeconomic issues: RE 116, 133, 136, 144, and 148.

8.0 Study Schedule

Data collection: May 2002 through April 2003.
Draft Interim Report due: November 2002.
Data analysis and report writing: May 2003 through September 2003.
Draft Final Report due: October 2003.

9.0 References

A wide range of existing reports and papers will be reviewed to implement the study, including reports that contain information on spending profiles of recreationists and papers describing the application of community-level economic base and input-output models for assessing local economic impacts. General reference documents are identified in Attachment A. Specific references cited in this study plan are identified below.

Guthrie, R., D.A. Penland, and E. Seagle. 1997. Lake Oroville State Recreation Area Recreational Use Study. Unpublished report, Chico State University, Chico CA.

Robison, M. 1995. Community Economic Impacts and Forest Service Management. Proceedings, 29th Annual Pacific Northwest Economic Conference. May 1995. Missoula, Montana.

Robison, H. 1997. Community input-output models for rural area analysis with an example from Central Idaho. The Annals of Regional Science. Volume 31, pages 325-351.

Robison, M. and R.S. Mack. 1997. A Note on the Use of Job and Income Projections as Backdrops for Input-Output Impact Assessments. Journal of Regional Analysis and Policy. 26(2).

ATTACHMENT A. EXISTING INFORMATION

1. Economic study of equestrian activity in the Oroville area (Sonoma State University)
2. Butte County General Plan
3. Local economic development plans (Butte County and incorporated areas)
4. Banking on Nature: The Economic Benefits to Local Communities of National Wildlife Refuge Visitation
5. 1996 National and State Economic Impacts of Wildlife Watching
6. Social, economic, environmental, and leisure assessment database
7. The Demand for and Net Economic Value of Waterfowl Hunting in California's Sacramento and San Joaquin Valley Refuges (John Loomis)
8. A Travel Cost Analysis of Waterfowl Hunting in the Central Valley
9. National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (U.S. Fish and Wildlife Service)
11. NPS and USFS studies of economic benefits to local communities from park and recreation spending (identified by Dangermond Group)
12. The Impact on Local Economies of Spending by Visitors to California State Parks (California State Parks)
12. Applying Economic Multipliers in the Recreation Setting (California State Parks)
13. Financial Feasibility and Regional Economic Benefits of Recreation at the Domenigoni Valley Reservoir (Foster Associates, with ERA and Dangermond Group)
14. Travel spending data (California Division of Tourism)
15. Visitor Reactions to the USFWS Fee Demonstration Program (USFWS)
16. Socioeconomic Impacts of Redman (Operation Bass) Tournaments
17 US Census demographic and economic activity data
18. Taxable sales by county and city (California Board of Equalization)
19. County business patterns data
20. Hunting and fishing revenues (California Fish and Game)
21. Economic Analysis for the Programmatic EIS/EIS on the Central Valley Project Improvement Act (USFWS)
22. An Economic Assessment of Alternative Water-level Management for Shasta and Trinity Lakes (Southeastern Forest Experiment Station)
23. Economic Analysis for the Programmatic EIS/EIS on the Trinity River Fishery Restoration Program (USFWS)